

**ALASKA STATE LEGISLATURE
SENATE LABOR AND COMMERCE STANDING COMMITTEE**

March 9, 2022

1:31 p.m.

DRAFT

MEMBERS PRESENT

Senator Joshua Revak, Vice Chair
Senator Gary Stevens
Senator Peter Micciche
Senator Elvi Gray-Jackson

MEMBERS ABSENT

Senator Mia Costello, Chair

COMMITTEE CALENDAR

PRESENTATIONS: ALASKA AEROSPACE DAY AT THE CAPITOL

Lieutenant Governor Kevin Meyer
Ross Garelick-Bell, Aerospace States Association
Cathy Cahill, PhD, University of Alaska Fairbanks
Robert McCoy, PhD, University of Alaska Fairbanks
Milton Keeter, Jr., Alaska Aerospace Corporation

- HEARD

PREVIOUS COMMITTEE ACTION

No previous action to record

WITNESS REGISTER

LIEUTENANT GOVERNOR KEVIN MEYER
State of Alaska
Juneau, Alaska

POSITION STATEMENT: Provided introductory remarks for Alaska Aerospace Day at the Capitol.

ROSS GARELICK-BELL, Executive Director
Aerospace States Association
Alexandria, Virginia

POSITION STATEMENT: Reported on the national activities of the Aerospace States Association in the last year and specifically about the upcoming annual meeting in Girdwood.

CATHY CAHILL, PhD, Director
Alaska Center for Unmanned Aircraft Systems Integration
University of Alaska Fairbanks
Fairbanks, Alaska

POSITION STATEMENT: Provided an update on ACUASI's activities over the last year to build the drone industry in Alaska.

ROBERT MCCOY, PhD, Director
Geophysical Institute
University of Alaska Fairbanks (UAF)
Fairbanks* Alaska

POSITION STATEMENT: Discussed the Geophysical Institute's ongoing aerospace research and operations.

MILTON KEETER JR., CEO
Alaska Aerospace Corporation
Anchorage, Alaska

POSITION STATEMENT: Delivered a presentation about the Alaska Aerospace Corporation.

ACTION NARRATIVE

[1:31:31 PM](#)

ACTING CHAIR STEVENS called the Senate Labor and Commerce Standing Committee meeting to order at 1:31 p.m. Present at the call to order were Senators Gray-Jackson, Revak, and Acting Chair Stevens.

Alaska Aerospace Day at the Capitol

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ACTING CHAIR STEVENS announced the committee would hear presentations for Aerospace Day at the Alaska State Capitol. He asked Lieutenant Governor Kevin Meyer and Ross Garelick Bell to provide introductory remarks.

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KEVIN MEYER, Lieutenant Governor of the State of Alaska, Juneau, Alaska, thanked the committee for taking time to learn more about the aerospace activities in the state, including rocket launches, drones, satellites, general aviation, and military aviation. He described aerospace as an emerging industry and highlighted its economic boost to the economy due to the efforts

of these entities to buy and hire locally. He introduced the presenters that included Dr. Cathy Cahill from the University of Alaska who would talk about drones; Dr. Robert McCoy from the University of Alaska Fairbanks Geophysical Institute who would talk about the rocket launches from Poker Flats; and Milton Keeter, Jr. from the Alaska Aerospace Corporation who would talk about rocket launches from Kodiak.

LIEUTENANT GOVERNOR MEYER introduced Ross Garelick-Bell from the Aerospace States Association to talk about what is happening nationally in aerospace and the requirement for each member state to have an Aerospace Day to educate legislators and the public about activities in this area.

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ROSS GARELICK-BELL, Executive Director, Aerospace States Association (ASA), Alexandria, Virginia, stated that he was pleased to see more states resuming activities related to aerospace as they emerge from COVID. In particular were the activities in Alaska to prepare for the ASA annual meeting from June 26 to July 1 in Girdwood. He noted that the day trip to the Pacific launch site in Kodiak was attracting a record number of state-elected officials. The meeting also coincides with the 50th anniversary of the Apollo 17 mission to the moon. Astronaut and moonwalker Harrison Schmidt, a former US Senator from New Mexico, will be the keynote speaker and intends to attend to tour to Kodiak to look at the new generation of space exploration and activities. He noted that Lieutenant Governor Meyer had been involved in the planning and organization of the meeting and activities and that the schedule was forthcoming.

MR. GARELICK-BELL reported that on the national level, ASA took time to reorganize and strengthen itself, which resulted in increased state interest and participation. He acknowledged that the increased interest was due in part to the fact that the aerospace industry was determined essential during the pandemic, so companies kept their employee and kept manufacturing for defense purposes. A number of states now see this as a way to diversity their workforce.

UNIVERSITY OF ALASKA

ACTING CHAIR STEVENS invited Dr. Cathy Cahill to begin her presentation.

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CATHY CAHILL, PhD, Director, Alaska Center for Unmanned Aircraft Systems Integration (ACUASI), University of Alaska Fairbanks (UAF), Fairbanks, Alaska, reminded the committee that last year she was charged with informing legislators about ACUASI and drones and the potential use of drones across the state for things such as mapping, surveying, wildlife management, infrastructure, medical supply delivery, and the host of other operations that are essential to access and conduct business in the state.

DR. CAHILL reminded the committee that last year she talked about the potential uses for Unmanned Aircraft Systems (UAS) and avoided the use of the term "drone" but because of the preference for gender neutral language and because UAS implies there are no humans in the loop, the term "drone" is again being used.

DR. CAHILL noted that she also talked about Beyond Visual Line of Sight (BVLOS) last year. This is the ability to fly a drone outside the pilot's the line of sight. This is what is needed for all long-distance missions in Alaska, but the FAA regulations currently do not allow this. The concern is about the potential for a manned and unmanned aircraft collision. There has been progress in addressing this problem, but no final resolution.

1:42:11 PM

DR. CAHILL reviewed slide 6 that describes ACUASI's work with Vigilant Aerospace over the last year in conduct, detect, and avoid testing. The slide read as follows:

- Conducted Detect and Avoid testing - DAA systems are designed to spot other aircraft in the air and either alert the pilot to their presence or autonomously avoid them
- Included scripted encounters with crewed fixed-wing and rotorcraft aircraft and with test drones
- Culminated with BVLOS test flights along the Trans-Alaska Pipeline System in June 2021, testing drones equipped with on-board FlightHorizon PILOT DAA system, on-board radar, ADS-B In, and GPS. Thank you to Alyeska Pipeline Service Company for their support!

She said the data from this testing shows that this technology is advancing and the way it is presented is advancing the technology.

DR. CAHILL turned to slide 7 that shows a simulated cockpit view of a Vigilant Aerospace screen. The red spot identified as Unmanned Aircraft (Ownship) in the center of the yellow circle is the test aircraft. The surrounding yellow circle shows how far away any other aircraft needs to be to maintain the FAA's definition of well clear. The white arrow in the red spot indicates detected air traffic and the projected trajectory that comes within the well clear range. The unmanned aircraft is given directions to speed up and turn left within 19 seconds, so the pilot is able to maneuver and avoid a violation of well clear and move forward.

DR. CAHILL highlighted that ACUASI was also asked to join the FAA rulemaking committee. She reviewed slide 8 that read as follows:

- The FAA asked ACUASI to be a member of their Aviation Rulemaking Committee (ARC) for low-altitude BVLOS operations
- 89 organizations representing traditional and drone pilots, technology and communications providers, first responders, public operators, etc. participated in the BVLOS ARC
- We fought to protect Alaska's unique airspace for both drones and traditional aircraft

DR. CAHILL reported that the Aviation Rulemaking Committee's consensus document was given to the FAA to move it forward. She acknowledged that she was the thorn in everybody's side because she had to ensure that she was protecting the airspace for Alaska and its unusual circumstances. For example, aircraft in Alaska do fly below 500 feet and not all aircraft in Alaska broadcast ADS B. The hope is that this input will keep the airspace safer for both traditional aviation and the unmanned aircraft that are coming.

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DR. CAHILL displayed slide 9 that showcases ACUASI aircraft in their new hangar at the Fairbanks International Airport (FIA). The aircraft shown is the Sea Hunter and three Sentries. Sea Hunter is a 16-foot wingspan, 300 pound aircraft and Sentry is a 12-foot wingspan 400 pound maximum takeoff weight aircraft. Preparations are underway to fly from FIA this spring. Slide 11 chronicles the Governor's visit to the hangar. She extended an invitation to visit to legislators. She highlighted that outside

of the military, very few programs in the country are testing the larger unmanned aircraft.

1:47:26 PM

SENATOR GRAY-JACKSON where the flights from Fairbanks are going.

DR. CAHILL replied that the initial focus will be to get air traffic control comfortable with their presence by flying a pattern from the airport numerous times. Then the first flight probably will be to Nenana. This provides an opportunity to fly beyond visual sight of the pilot, although the aircraft will always be in line of sight of a chase plane. The goal of the FAA's Beyond Program is to from Fairbanks to Galena go unmanned within two and one-half years.

ACTING CHAIR STEVENS asked how far a drone could fly.

DR. CAHILL replied that the Sea Hunter currently is being flown in Canada and those flights are generally about eight hours, although the fuel capacity is for about 12.5 hours. The cruising speed is 100 miles per hour. She noted that a company ACUASI has been working with has converted Cessna Grand Caravans to unmanned aircraft. The expectation is that this rated aircraft with a safety pilot aboard and autonomous system will be flying out of the Fairbanks International Airport this summer. This is a life-changing step toward less expensive cargo deliveries to communities.

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DR. CAHILL displayed slide 11 and explained that Transport Canada declared ACUASI essential and asked the team to return to Gaspe, Quebec, Canada to fly the SeaHunter aircraft and survey shipping lanes for North Atlantic right whales using their artificial intelligence camera payload. The next two slides show the difference between what the naked eye sees and what the AI camera sees in the water. When a whale is identified, an alert is sent and Transport Canada and the Department of Fisheries and Oceans slow shipping traffic in the St. Lawrence Seaway to preserve this endangered whale.

DR. CAHILL turned to slide 14 and described ACUASI disaster response:

- ACUASI is part of an FAA project that aims to develop a concept of operations for how different federal, state, and local governments, civil operators, and others can deploy drones

cooperatively after disasters, such as earthquakes, volcanoes, ice jams, river flooding and oil spills

- ACUASI and the Alaska Department of Transportation and Public Facilities (DOT&PF) are using drones to identify areas with high avalanche potential

In the next year or two, mock exercises will be run in Alaska and other parts of the US.

1:51:08 PM

DR. CAHILL reviewed some of the partnerships ACUASI has developed:

- The number of non-disclosure agreements and partnerships between ACUASI and aerospace companies, oil and gas producers, pharmaceutical companies (Merck), air cargo companies (including Alaskan air carriers), Federal agencies, etc. has skyrocketed in the last year
- ACUASI and the State of Alaska DOT&PF are working together to advance aviation safety and infrastructure in the State

DR. CAHILL specifically mentioned partnerships with Merck, Phoenix Solutions, and Alyeska Pipeline Service Company. She attributed the expanding number of partnerships to the FAA telling companies who want to advance these technologies to go to Africa or Alaska.

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DR. CAHILL discussed the ACUASI's funding increases that are outlined on slide 16:

- ACUASI received two major grants/contracts during the past 6 months
 - ~ Cold Regions Research and Engineering Laboratory (\$8M)
 - ~ Federal Aviation Administration (\$4.05M)
- Both awards address the ability to detect, track, and identify unauthorized drones under a diversity of conditions, but especially under the challenging conditions of Alaska in winter

DR. CAHILL reviewed ACUASI's education focus outlined on slide 17:

- UAA, UAF, and UAS are all developing drone courses - UAA: Remote Pilot w/operations over people
 - ~ UAF: Certificate in UAS operations and additional degrees in aerospace engineering
 - ~ UAS: Drones in environmental studies
- ACUASI conducts STEM outreach events

She highlighted that the FAA has encouraged ACUASI to do outreach in remote communities in Alaska. She said we go for the children but it's an educational event for the entire community.

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DR. CAHILL reviewed what ACUASI is planning to do in the next six months:

- Conduct our first large drone flights from FAI
- Assist partners in flying the first converted Cessna Grand Caravans in Alaska (with safety pilots on board)
- Fly our first drone mission between Fairbanks and Nenana
- Conduct a paid medical supply delivery between two communities with Merck
- Return to Canada for whale monitoring
- Conduct several flight campaigns for the CRREL and FAA projects
- Continue our work with the State of Alaska DOT&PF
- Conduct STEM outreach across Alaska

DR. CAHILL noted that the foregoing doesn't mention ACUASI's many research projects.

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DR. CAHILL described what ACUASI plans to do with the \$10 million funding increment in the Governor's budget:

- Hire faculty and instructors to support drone/aerospace curricula at UA
- Identify locations for and begin to establish three emerging technology test ranges

- Accelerate the testing and pioneering flights needed to prove the safety of BVLOS operations in Alaska through the FAA's BEYOND program

DR. CAHILL relayed the following about ACUASI's plans for the future:

ACUASI will continue to lead the way to the safe integration of drones into the Alaskan airspace

- ACUASI will be flying large drones from Alaskan airports to demonstrate drone capabilities and test Alaskan business cases
- ACUASI and its partners will be developing the technology and processes for monitoring oil and gas infrastructure
- ACUASI will be transferring commercial operations it pioneered to Alaskan companies

DR. CAHILL concluded with the same statement she made last year. "We are going to lead the way to make this happen."

SENATOR GRAY-JACKSON asked at what altitude drones fly.

DR. CAHILL replied that SeaHunter set the record at 15,003 feet, but she had experience with aircraft with 141 foot wing span that was designed to operate at about 80,000 feet and deliver broadband.

ACTING CHAIR STEVENS commented on the safety benefit and potentially increased accuracy of using unmanned aircraft to spot herring.

DR. CAHILL agreed that the current technology is well suited for spotting herring balls without the danger of midair collisions.

ACTING CHAIR STEVENS asked if there were any lessons learned for the industry generally and Alaska in particular from the use of drones in the ongoing war in Ukraine.

DR. CAHILL answered yes, there are a lot of lessons to be learned. Drones are being used very effectively in Ukraine and that is spurring US technology providers to develop counter systems. She offered her belief that this has been a wakeup call for the US military about the current operations in Alaska. The Gray Eagles and Shadows at Fort Wainwright should be used more

regularly and under varied conditions that are less than ideal, particularly in winter.

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ACTING CHAIR STEVENS thanked Dr. McCoy and welcomed Dr. Robert McCoy.

1:59:21 PM

ROBERT MCCOY, PhD, Director, Geophysical Institute, University of Alaska Fairbanks, Fairbanks, Alaska, provided an outline of his talk, all of which was to emphasize that Alaska is an aerospace state. He displayed slide 2 that provides an aerial view of the state with specific identification of:

- The Poker Flat Research Range 35 miles from UAF that currently houses NASA employees and three rockets that are poised to launch suborbital up into the Brooks Range and the Arctic Ocean;
- The Pacific Spaceport Complex-Alaska (PSCA) on Kodiak Island from which Alaska Aerospace Corporation launches orbital and suborbital;
- The Unmanned Aircraft Systems Program that Dr. Cahill discussed;
- UAF's nine satellite dishes that are related to downlinking data from polar orbiting satellites; and
- The university-owned High-frequency Active Auroral Research Program (HAARP) that has substantial potential to support aerospace in the military in Alaska.

DR. MCCOY directed attention to the picture of the globe on slide 3 to distinguish between the launches from Kodiak and Poker Flat. Poker Flat launches suborbital focusing mainly on night launches and the aurora. Poker Flat also has a limited launch zone out to the Arctic Ocean but not over the pipeline to the west or into Canada to the east. By comparison, Alaska Aerospace Corporation has a much larger launch range from one of the best space ports in the country.

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DR. MCCOY turned to slide 4 and directed attention to the map of the state and table of the five zones they launch into, depending on the winds and how high the payload is going. He noted the successful launch last week into zone 3 looking for pulsating aurora. He pointed to the chart of NASA sounding rocket launch vehicles to illustrate the variety of rockets, the largest of which is four stage. The first three stages have fins

that allow the rocket to spin as it accelerates upwards. By the time the fourth stage ignites, the rocket is in the atmosphere. He recounted the following data points about Poker Flat rocket launches:

- The first launch was March 5, 1969, 53 years ago;
- The largest rocket launched was 11 tons;
- The longest rocket launched was over 76 feet;
- The highest apogee of any launch was 930 miles;
- In keeping with a clean range policy, helicopters are deployed whenever it is possible to recover a payload that came down in the Brooks Range; and
- More than 1,800 meteorological rockets have been launched

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DR. MCCOY directed attention to the photos of the Poker Flat Research Range on slide 5. The photo on the bottom left shows the launching rail and the building that houses the rail that slides back in preparation for a launch. He reported that Poker Flat is the largest land-based range in the world. It has five rails and the capability to launch up to five rockets in a few seconds. Other facilities at the launch site are funded by the National Science Foundation (NSF). This includes the Poker Flat Incoherent Scatter Radar that is the size of a football stadium and provides the opportunity to probe the ionosphere while flying through with rockets.

The photo on the top right of slide 5 depicts the Light Detection and Ranging (LIDAR) Observatory that has three lasers and provides the ability to study ranges or distances from 60-150 kilometers. The university recently received funding for a fourth LIDAR that will be moved the HAARP once it's built.

DR. MCCOY turned to slide 6. He explained that when an investor brings their rocket to Poker Flat, the scientists and NASA employees test it for several weeks before it is taken to the rail, bolted on, and readied for launch. At that point the rocket can be held until the conditions are suitable. He highlighted that Poker Flat provides a much more favorable launch test site than White Sands because of the differing population densities and evacuation measures that must be taken to ensure the area is all clear. Poker Flat launches can hold for weeks and launch to an event.

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DR. MCCOY displayed slide 7 and spoke to the photo on the upper left that show helicopter assisted recovery of a payload. The

photo on the top right shows the March 5, 2022 LAMP mission launch to study the pulsating aurora. He noted that the payload came down in the river, which will make recovery a little more challenging. Two more rockets will launch in the next few weeks depending on the weather and aural conditions. He said the photo on the bottom of the slide shows all the things to measure the upper atmosphere and ionosphere. This includes radars on Kodiak, King Salmon, and Adak; the Poker Flat Incoherent Scatter Radar, and all sky cameras. The institute has in Fort Yukon, Toolik, Kaktovik, Eagle, and Venetie. He noted that most of the data was ionospheric and that the Missile Defense Agency recently granted permission to share it with the Clear Space Force Station to support Long-Range Discrimination Radar (LRDR). These are part of the 80-100 new instruments that have been installed in Alaska recently.

2:06:23 PM

DR. MCCOY displayed slide 9 to illustrate that polar orbiting satellites can be used to map all regions of the world. These satellites orbit 11 times a day and because of its high latitude, nine of those orbits pass right over Fairbanks. The picture on the left of slide 10 depicts the viewing horizon. NASA owns four of the satellites in Fairbanks and the university uses their own to downlink about 40 percent of NASA's polar orbiting data. Additional data is downlinked and shared with the Department of Defense National Geospatial Information Agency and others.

DR. MCCOY turned his attention to the satellites shown on slide 11, explaining that the dishes are S and X band. NASA recently provided funding for a K band dish with the intention to launch the NASA Indian Space Research Organization (NASA-ISRO) satellite, which will have the capability of generating 150 petabytes of data. He showed an example of a synthetic aperture radar image of Cook Inlet from space and commented that the Department of Defense is very interested in the capabilities of this radar. He noted that the image on slide 12 was of New Orleans during Hurricane Ida in 2021. The Alaska Satellite facility has more than 100 employees so it has a lot of capability to collect, process and send out this type of data.

2:08:03 PM

DR. MCCOY said the UAF Geophysical Institute also works with the National Oceanic and Atmospheric Administration (NOAA). Their satellites pass directly over Fairbanks. UAF's Geographic Information Network of Alaska institute has satellite dishes at Filmore Creek and one on campus and they downlink data about

wildfires in summer and snow cover in winter. He pointed to the image on slide 13 that was taken in October and noted that the turquoise areas indicate snow cover.

DR. MCCOY stated that in 2015 DoD gave UAF the High Frequency Active Auroral Research Program (HAARP), the largest and most powerful ham radio in the world. It is a 33 acre phased high frequency array that can transmit in the ham frequency range of 2.8 to 10 MHz. It is powered by five 3,600 hp diesel engines that can generate 3.6 MW. HAARP was built with congressional earmarks and funding from the Air Force Research Laboratory (AFRL), the Office of Naval Research (ONR), and the Defense Advanced Research Projects Agency (DARPA). He mentioned the potential use of HAARP for over the horizon radar to map a phased array of the umbrella covering Alaska. He also commented on the antenna installations in Delta Junction and the potential uses to detect launches, cruise missiles, and hypersonic vehicles.

[2:10:37 PM](#)

DR. MCCOY described installing antennas in Delta Junction and noted that someone from the Naval Research Lab was looking at the potential to detect launches. He noted that at the request of the Alaska Aerospace Corporation, UAF has been developing plans for a special certificate in spaceport operations and management that can be delivered remotely.

DR. MCCOY thanked the committee and restated that Alaska is an aerospace state. It is a leader in the country and has a bright future.

ACTING CHAIR STEVENS commented on potential help now that earmarks were back in Congress.

DR. MCCOY mentioned a new grant from the National Science Foundation that will provide five years of funding for HAARP

[2:13:18 PM](#)

SENATOR GRAY-JACKSON extended her thanks for the presentation and magnificent graphics.

ACTING CHAIR STEVENS thanked Dr. McCoy for the presentation and his service to the state.

ALASKA AEROSPACE CORPORATION

[2:13:57 PM](#)

ACTING CHAIR STEVENS invited Milton Keeter Jr. to begin his presentation.

[2:14:10 PM](#)

MILTON KEETER JR., CEO, Alaska Aerospace Corporation, Anchorage, Alaska, provided an outline of his presentation:

[Original punctuation provided.]

- Purpose of Presentation
 - To provide the Legislature with pertinent information concerning the state-owned corporation
 - To inform the Legislature of 2021 corporation activities
 - To update the Legislature on Alaska Aerospace's financial position
 - To provide a preview of projected future operations and targeted business markets

[2:14:28 PM](#)

SENATOR MICCICHE joined the committee.

MR. KEETER described Alaska Aerospace Corporation and its history:

[Original punctuation provided.]

- State-Owned corporation established in 1991 to diversity economy with aerospace industry
- Nine-member Board of Directors, plus two legislative ex-officio members
- Established and trusted launch capabilities
- FAA-licensed commercial spaceport
- Operates the Pacific Spaceport Complex - Alaska (PSCA)
- Twenty-eight launches since 1998
- Business-oriented, low-cost, efficient & effective
- No government sustainment funding

[2:16:36 PM](#)

MR. KEETER summarized slide 4, PSCA PROVIDES AMERICA WITH ASSURED ACCESS TO SPACE

- Kodiak Island, Alaska
 - Located on 3,700 acres of public land at Narrow Cape
 - Year-round launch operations
- Designed for both national security and commercial launch
 - Efficient for Low Earth Orbit (LEO), sun synchronous, and high inclination orbits
- ~\$120M of capital investment
 - Federal, State, and private-sector funding
 - On-going Federal Spaceport Enhancement Program equips spaceport to continue to meet future launch needs

MR. KEETER directed attention to the image on the right of the slide and highlighted that the 110-220 degree launch azimuth is the largest of any spaceport.

MR. KEETER turned to slide 5 that provides a virtual tour of the 3,700 acre spaceport. He pointed out:

- **Commercial launch pads** The two in the picture are currently being used by commercial customers. A rocket is currently on the pad in Kodiak.
- **Integration & Processing Facility**
- **Spacecraft & Assemblies Transfer** This building moves away from the rocket when it is ready to launch.
- **Launch Pad 2** Primarily used to launch larger vehicles.
- **Launch Service Structure (Launch Pad 1)** This provides a controlled environment to work on a rocket.
- **Rocket Motor Storage Facility**
- **Payload Processing Facility** Provides a controlled environment.
- **Instrumentation Field** Vehicles are tracked and terminations executed. Instrumentation close by also provides the ability to do real time weather data for vehicles and missions.
- **Maintenance Support Facility** The brain safety telemetry system inside converts data from antennas into readable data for the spaceport and customers.

- **Launch Mission Control Centers** Missions are executed and followed from this location.

[2:22:15 PM](#)

MR. KEETER reviewed slide 6 that shows the six launch pads and noted the recent facility addition for a new commercial customer.

MR. KEETER reviewed the spaceport's typical customers.

GOVERNMENT CUSTOMERS

- Missile Defense Agency
- Space and Missile Defense Command
- United States Space Force

COMMERCIAL CUSTOMERS

- Astra Space
 - US based company
 - Rocket 3.2 reached space from Kodiak in Dec 20
 - 40-foot tall, kerosene/LOX fuel
 - 2022 PSCA launches
- ABL Space Systems
 - US based company
 - RS1 is a two-stage, ground-launched vehicle
 - 88 feet tall
- Phantom Space
 - US based company
 - Dakota Rocket is a two stage , ground launched vehicle
 - 61 feet tall LOX and RP-1 fuel • In development for 2023
- Other commercial companies in negotiations

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SENATOR MICCICHE asked if the location of the launch site makes a difference depending on the orbit.

MR. KEETER said the first consideration is what orbit the payload has to get into. If it's part of a constellation, it's

probably trying to fit into a specific location between other satellites. The second consideration is the performance of the rocket, because they don't all have the capability or performance to get into a specific orbit. He noted that Kodiak is easier for the smaller launch vehicles because a large, high performance vehicle isn't needed.

ACTING CHAIR STEVENS recalled that one of the reasons for selecting Kodiak was the distance from any populations centers should there be an aborted flights. Hawaii was the closest.

MR. KEETER agreed.

[2:28:22 PM](#)

MR. KEETER reviewed slide 9.

LAUNCH SUPPORT TO OTHER SPACEPORTS

- Range Safety & Telemetry System (RSTS) Support to Rocket Lab (USA)
 - Launch Complex - One, Mahia peninsula, New Zealand
 - AAC supported first ten Rocket Lab launches; May 2017 - Dec 2019
- Agreements with other launch sites for similar support
 - Agreement signed with Spaceport Camden, Georgia
 - Agreement signed to support United Kingdom spaceport

[2:29:41 PM](#)

SENATOR MICCICHE asked if there was an international agreement regarding satellite locations to prevent competitors from getting in one other's way.

MR. KEETER explained that the owner of the payload or satellite has to register with the Department of State, the FAA, and other agencies. Once it's in orbit they must show the location and then it's tracked through China Mountain.

SENATOR MICCICHE asked how this fits with launches from China, Russia, and other countries.

MR. KEETER said he couldn't speak to how their satellites are registered, but China launches are tracked.

[2:31:34 PM](#)

MR. KEETER reviewed slide 10.

AMERICA'S ONLY FINANCIALLY SELF-SUSTAINING SPACEPORT

- Corporation's activities are 100% funded by contracts
 - Alaska Aerospace has not received state general fund sustainment funding since 2014
 - All salaries and expenses are funded by new dollars to Alaska
 - Alaska Aerospace has generated over \$227M in launch revenue since first mission in 1998
 - FY21 revenues were down ~50% due to COVID mission delays and cancellations

ACTING CHAIR STEVENS recognized Craig Campbell was in the audience.

MR. KEETER reviewed slide 11.

POSITIVE COMMUNITY ECONOMIC IMPACT

- Spaceport launches have generated ~\$80.0M economic impact to Kodiak
 - Commercial launch will transform into enduring operations (e.g., Kodiak-based staff, light manufacturing, logistics, refurbishment, etc.)
- Alaska-purchased Goods, Services, and Labor: ~\$16.3M annually
 - Kodiak: \$5.5M, Anchorage: \$9.3M, Rest of State: \$1.5M (average FY17-FY19)
- Supporting Alaska's 'New Space' entrepreneurs

MR. KEETER reviewed slide 12.

BUILDING AN ALASKAN SPACE WORKFORCE

- Developing an Alaska-grown workforce
 - Transitioned from ~75% Lower-48 workforce to 95% Alaska workforce (75% on Kodiak)

- Spaceport Manager & Deputy Manager born and raised on Kodiak Island
- Partnered with University of Alaska Space Grant Program
 - Sponsor of Internship Programs at AAC and PSCA
- Enhancing technical job skills through technical training and career development
 - On-the-job skill learning opportunities
 - Increased STEM-focused responsibilities for staff
 - Experience at multiple spaceports and mission types

[2:34:37 PM](#)

MR. KEETER reviewed slide 13.

PARTNERSHIPS & COLLABORATION

- Creating Alaska's New Space Economy
 - Rapid & Agile Space Launch (RASL) Innovation Center
 - Commercial spaceport license for Poker Flat Research Range
 - Professional Certificate in Spaceport Operations & Management
- Integrating space launch into Kodiak's way-of-life
 - Pre-coordinating launch schedules and closures with the community to minimize impacts on shared use of air, sea, and land
 - Spaceport Master Plan Completed: Documents current and future site lay-out
 - Spaceport Ambassador program with Kodiak Civil Air Patrol
 - Board Member on Kodiak Economic Development Corporation

ACTING CHAIR STEVENS noted that the community support and asked if there were future plans for the site that he could share.

MR. KEETER said his vision is to increase the commercial customer base, so additional launch pads would be necessary.

He'd like to create an environment for a reentry pad so one of the stages of the rocket could be recovered and reused. Discussions are also ongoing with government customers to generate more consistent use of the facility. Future growth plans also include the Aleutian hypersonic test flights.

ACTING CHAIR STEVENS mentioned the misfire several years ago that damaged a structure and asked if redundancy in the system was part of the plan.

MR. KEETER replied it's a concern but it's difficult to have a redundant launch pad for every rocket.

[2:40:39 PM](#)

SENATOR MICCICHE commented that most legislators were very proud of how far the corporation had come.

ACTING CHAIR STEVENS recalled that he was on the Kodiak Borough Assembly when the rocket site was first approved. The impact on the community had been very positive.

ACTING CHAIR STEVENS asked Lieutenant Governor Meyer if he had closing comments.

[2:41:58 PM](#)

LIEUTENANT GOVERNOR MEYER thanked the committee for hosting the second Aerospace Day at the Alaska Capitol. He expressed hope that SJR 10 would pass so the day would be celebrated in March every year. He also extended thanks to the presenters.

SENATOR MICCICHE asked if there was a launch date that the committee could travel to Kodiak to experience.

MR. KEETER answered that the next launch date is scheduled for March 13-15. He noted there was an integrated launch schedule on the website.

ACTING CHAIR STEVENS thanked the presenters.

[2:48:49 PM](#)

There being no further business to come before the committee, Acting Chair Stevens adjourned the Senate Labor and Commerce Standing Committee meeting at 2:48 p.m.